Rethinking the Neutron Star Collision Conjecture: An Oceanic Origin for All Elements Heavier than Zinc

Introduction

For approximately 50 years, the prevailing theory relied upon to explain the manner in which heavy elements came into being has been that these elements formed during the collision of two neutron stars. Although it is true that neutron stars have been observed to collide and although most stellar furnaces would not be capable of producing such heavy elements, the leap of logic used to form the basis of neutron star collision theory is for this author, too far-fetched not to be thoroughly reconsidered.

Abstract

The reasoning goes that if most of our common physical elements come from stellar fusion reactions, ALL elemental synthesis must rely upon stellar fusion reactions as their mode of manufacture. This is actually a case of the use of inductive rather than deductive reasoning. Just because much of the material that makes up our planet came directly from the remains of former stars does not necessarily mean that stellar fusion is the sole method for altering the composition of an element or that all of the elements arrived at their present state through a stellar fusion process.

There are a number of good reasons to doubt the neutron star collision theory of heavy element synthesis. The first such reason is the fact that helium deposits can be found and, indeed, are exclusively found within methane deposits that are naturally pressurized within the Earth. To obtain helium, helium must be pulled from methane, usually pursuant to a hydraulic fracturing process. This "fracking" process does not generate the pressures needed to synthesize helium, but rather, this helium has to form within the Earth over millions of years.

All that is required to make helium are two protons, preferably with one of those protons being a deuterium to start out with. Those familiar with my work should already be aware that neutrons do not need to be made at the birth of the Universe or inside of stars. Neutrons, I submit, form naturally as a result of the close collocation of two protons. Gluons are naturally emitted from each proton and are directed toward one another. These converging flows of quantum particles can lead to the generation of a variety of particles, but when it's two protons, a neutron is frequently the result. To understand my reasoning, one needs to understand that all that is required to make a neutron is forcing two protons to remain still and near one another.

Understanding this, it is easy to see how helium came about within methane deposits. After all, how could helium, which is lighter than air, wind up deep underground if it came from a stellar explosion elsewhere in the galaxy? Shouldn't it be found exclusively in our atmosphere if its origins are stellar?

Helium under the earth, I would suggest, forms as the result of hydrogen (part of methane... note that helium is not part of methane) breaking off from the methane molecule under intense pressures. Under these pressures, there is a

chance, however remote, that two hydrogens can migrate into proximity and fuse outside of stellar conditions. By definition, this is a form of fusion, but it is certainly not stellar fusion.

Perhaps the best argument for a reconsideration of the neutron star collision theory is the presence of uranium in the upper crust of the Earth when considered along with uranium's properties.

Uranium, as it exists in the crust, is said to take 100,000 years to decay ultimately into a non-radioactive, "safe" material. This fact has guided planning around nuclear waste disposal for decades. If it is true that uranium takes only 100,000 years, even in its most pure form, to decay into a non-radioactive (or, at least, minimally radioactive) isotope, how then, could uranium have arrived from a distant point in the galaxy in less than that amount of time? Travelling at perhaps tens of thousands of miles per hour, interstellar matter would require millions of years to find a new solar system to call home.

If what we are being told about the half-life of uranium is correct and if we accept as true that stellar debris takes, at minimum, one million years to settle into orbit around another star, we cannot logically accept the theory that uranium exists on the Earth thanks to extremely rare neutron star collisions. If a pair of neutron stars were even capable of generating such heavy elements (they are not; they would conversely tend to shred such elements into quantum particles) those elements would, if radioactive, fully decay long before arrival on Earth.

If this is not from whence uranium and other heavy elements come, then what sort of process is responsible for the presence of these elements?

I propose that given billions of years, conditions below the ocean floor offer the correct combination of conditions to foster extremely gradual extra-stellar fusion which may be termed Pressurized Saltwater Fusion.

This hypothesis is actually far more plausible than the prevailing theory as it can account for the creation for all elements with more than 30 protons including the radioactive isotopes of heavy elements. While the first 30 elements were made at the center of a star, all heavier elements, I would suggest, gradually acquired additional protons and neutrons under the intense pressures below the ocean floor.

I say below the ocean floor only because deposits of heavy elements have not been found on the surface of the bedrock in substantial quantities. There is an active debate as to whether the water of the ocean extends into caverns below the ocean's surface and, for my hypothesis to prove correct, these further sub-bedrock depths would need to exist.

Intense pressures below the ocean floor bring water molecules into close proximity. The very property of salt water that helps it to resist freezing is essential for driving this process. It is only the combination of high pressure and the presence of salt in the water that makes heavy element synthesis possible.

When salt is present in water, its cubic shape creates a self-sustaining agitation of the water on a nano-scale. This agitation, the result of the cubic structure of the salt and the "V-Shape" of the water molecules, keeps molecules moving rather than settling into lattice patterns at temperatures below zero degrees Celsius. The corners of salt particles often drift into a small area between the two hydrogens of water, the 104.45 degree angle of the hydrogens being just accomodating enough for the 90-degree right angle of a cubic particle to enter. Mutual repulsion causes the water molecule to launch with great force.

If this effect prevents saltwater from freezing, it would naturally lend itself to supporting Pressurized Saltwater Fusion. Under high pressure conditions, ocean water would be occasionally impelled to collide in exactly such a way as to cause a hydrogen to break off of one water molecule, freeing it to jump elsewhere. If the walls of these sub-floor caverns are made of materials including zinc (likely since this is the most abundant metal on Earth,) with sufficient pressure, that liberated proton may be incorporated into that zinc, causing it to become an isotope of gallium.

If that same gallium atom has added to it yet another proton, depending upon where on the nucleus it is incorporated, it will either become one of two possible isotopes of the next element. This process continues until elements as heavy as 92 protons, with all manner of isotopes scattered in between the stable elements, are created. Amongst newly-transmuted atoms, unstable isotopes are more common than stable isotopes. Only through the passage of millions of years is it possible, in such a process, for stable isotopes to come to outnumber unstable ones.

Just as volcanoes on land are known to eject precious gems that form under the surface of the Earth (through a somewhat different kind of process that doesn't involve fusion) an undersea volcano would be needed to bring to the surface the panoply of elements from atomic numbers 31 to 92, stable and otherwise, to the surface.

These undersea volcanoes erupt significantly only once every few million years and cataclysmically every hundred million years. When they do, however, not only could a tsunami be generated, but the seawater would naturally become laden with whatever elements may have passively accumulated through PSF over the eons. Although the initial tsunami would likely be free from these heavy elements, saltwater would be deposited well-inland, explaining why salt mines can be found nearly everywhere on Earth. Subsequent to the subsiding of this catastrophic tidal wave, the oceans would remain polluted with a mixture of many elements including radioactive elements for perhaps thousands of years. Unrelated tidal waves in the subsequent years as well as periods of high ocean levels would explain deposits in places such as Hanford, WA and western Canada.

This scenario would account for the mysterious fact that uranium and other radioactive decay products of uranium such as radon are found almost exclusively along coastlines.

This would furthermore explain the five accepted mass extinction events and how both land and ocean life were both effected equally by the same events. None of those events effected land animals or sea life in isolation; both groups were impacted roughly equally in all five cases.

If this is how heavy elements are actually generated, then the implications for identifying worlds with intelligent life are numerous. It is unlikely that a civilization would be able to develop advanced technology without the availability of any elements with more than 30 protons. This would mean no semiconductors, no nuclear power, and limited possibilities for technology. Although any planet lacking heavy elements may still feature intelligent life, the chances for their eventual development into a "Type 1 Civilization" would be diminished. If the thing that makes the formation of these heavy elements possible is the presence of both saltwater oceans of at least a certain depth combined with vulcanism, then any planet that lacks both of these features could be safely ruled out as possible Type 1 Civilizations.

Conclusion

While Pressurized Saltwater Fusion is an extremely gradual process, it may eventually be adapted to transmute elements through an additive process, in contrast with my own previously published method for reductive transmutation of elements.

At minimum, confirmation of this hypothesis would provide a more sound basis for future study than any studies based upon false assumptions such as the neutron star collison conjecture.